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Descriptions of such facilities for modern foreign language classes as the foreign language classroom, the language laboratory, and the electronic classroom are supplemented by illustrations and schematic plans of each type of installation. Specifications for equipment and furniture, room plans, and explanations of possible variations are offered. Common language laboratory terms are defined, and additional references on the language laboratory are provided. (AF)

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foreign language facilities in high school

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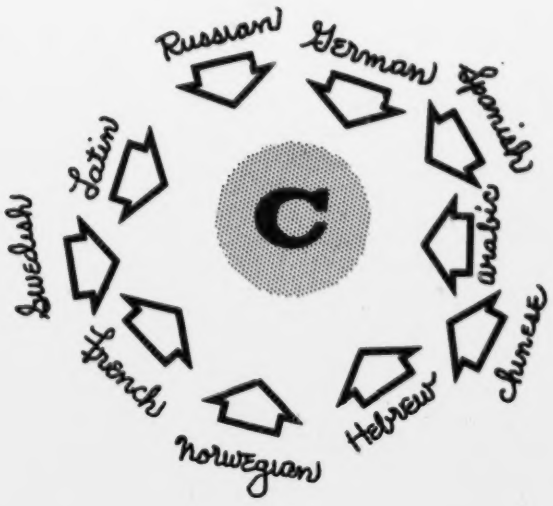
FOREIGN LANGUAGE FACILITIES IN HIGH SCHOOL

FOREIGN LANGUAGE CLASSROOM



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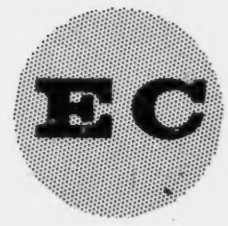
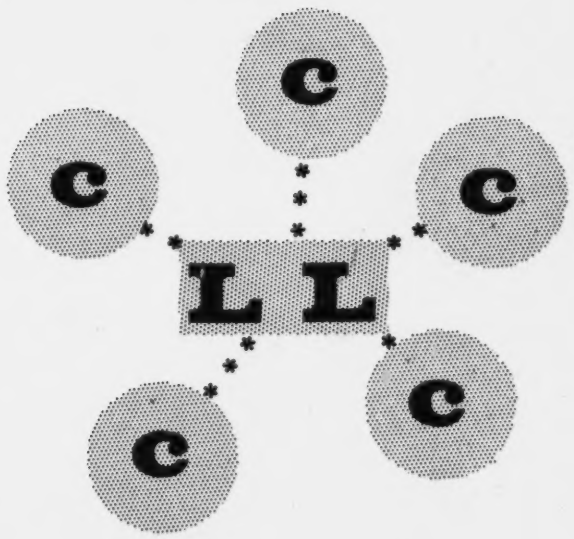


FOREIGN LANGUAGE LABORATORY



FOREIGN LANGUAGE FACILITIES IN HIGH SCHOOL

by

Minnesota School Facilities Council

A commission of the Minnesota School Facilities Council in cooperation with the Saint Paul Public Schools and the Minnesota State Department of Education

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FOREWORD

Since World War II, the learning of foreign languages has been receiving renewed emphasis in our American schools. This rapidly increasing interest in second language learning has resulted from increased contact with foreign populations by Americans in all walks of life.

Military service abroad, government and business assignments overseas, interest in foreign travel and extensive cultural exchange programs have all contributed to the new awareness that we Americans must be able to communicate freely with other peoples in their own languages. A new desire to learn to speak foreign languages has been reinforced by the linguistic scientist's insistence that language learning is most effective when audio-lingual (listening-speaking) learning precedes reading and writing practice.

Thus to the new interest in foreign language study has been added a definite shift away from the traditional grammar-translation course. A new set of linguistic objectives of modern language study has been established. These objectives are:

1. Understanding a foreign language when it is spoken by native speakers.
2. Speaking a language in a manner acceptable to native speakers.
3. Reading without translation into English, newspapers, magazines, and literary texts.
4. Writing the language in correct natural patterns typical of native speakers.

To these objectives must be added that of reducing the mono-cultural orientation of the pupil, causing him to accept behavior which may vary markedly from his own cultural patterns.

For many years, some teachers have been teaching foreign languages by conversational methods. However, their efforts have been hindered by lack of proper equipment and materials. Learning to understand and speak a modern foreign language requires carefully constructed materials of a type not found in the traditional textbook. It must be possible for the pupil to hear and imitate native speakers and also to practice patterns of spoken grammar. Linguistically sound learning materials have now become available for teaching modern foreign language courses. These materials make extensive use of recordings and stress the nature of spoken language as opposed to the nature of written language.

With this change in objectives and techniques, facilities for modern foreign language classes must also change. The traditional classroom designed for reading and writing practice must be modified to allow for the use of electro-mechanical equipment. As adjuncts to the classroom, many schools are adding language laboratories, rooms with extensive installations of equipment for language listening and speaking practice. Some schools are attempting to combine the classroom and the language laboratory in a convertible installation usually referred to as the electronic classroom. These facilities are important

tools providing the teacher and the student with the best possible environment for learning the foreign language.

Much time must be devoted to planning these new facilities if each high school youth is to get the maximum benefit in learning the new language. Logical steps in planning include the following:

1. The goals for each year of the foreign language study and plans for achieving these goals must be determined. Currently it is generally felt that pupils will use the laboratory most in beginning years when developing audio-lingual skills, and less later on when reading and writing require larger amounts of time. As materials are developed and teachers become more familiar with laboratory techniques, one can see continued extensive use of the laboratory at more advanced levels of instruction. Facilities provided for teachers should be flexible enough to be adaptable to the different individuals who will use them.

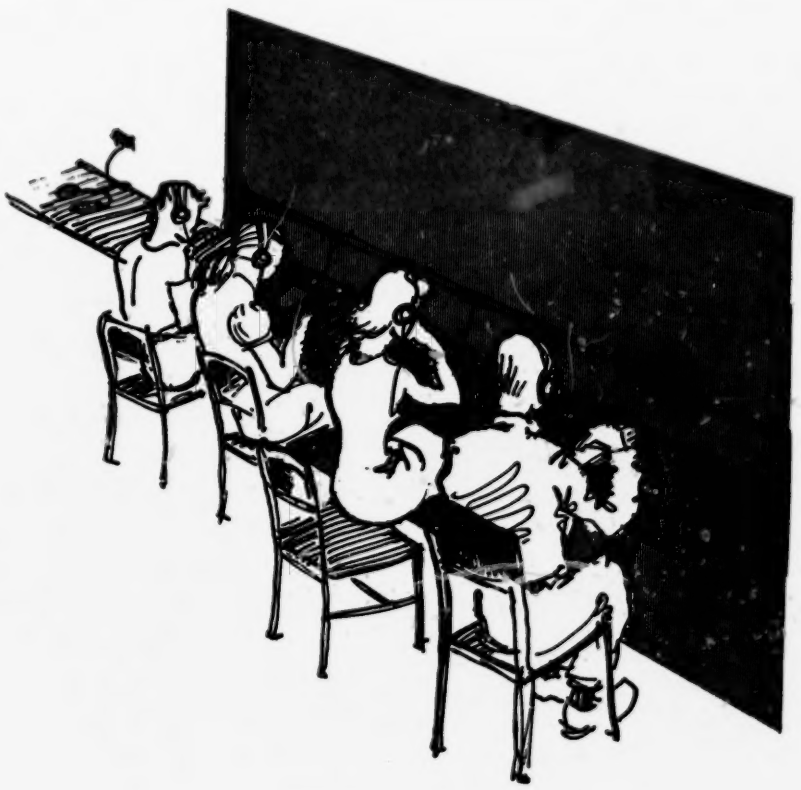
2. Teachers must decide which elements of the foreign language will be taught in the classroom and which elements will be taught in the language laboratory. The relationship between the classroom and the laboratory must be kept clearly in mind.

3. The best planning of the foreign language classroom and the foreign language laboratory will result from teamwork. The team should include foreign language teachers on the staff, school administrators, consultants in foreign languages in local colleges as well as those from the state department of education. The team should seek the professional advice of architects, engineers, electronic technicians, and manufacturers' representatives. The team should employ a consultant to help them plan and do the final checking of electronic equipment. The foreign language consultant of the State Department of Education should be contacted for a listing of available consultants and existing installations.

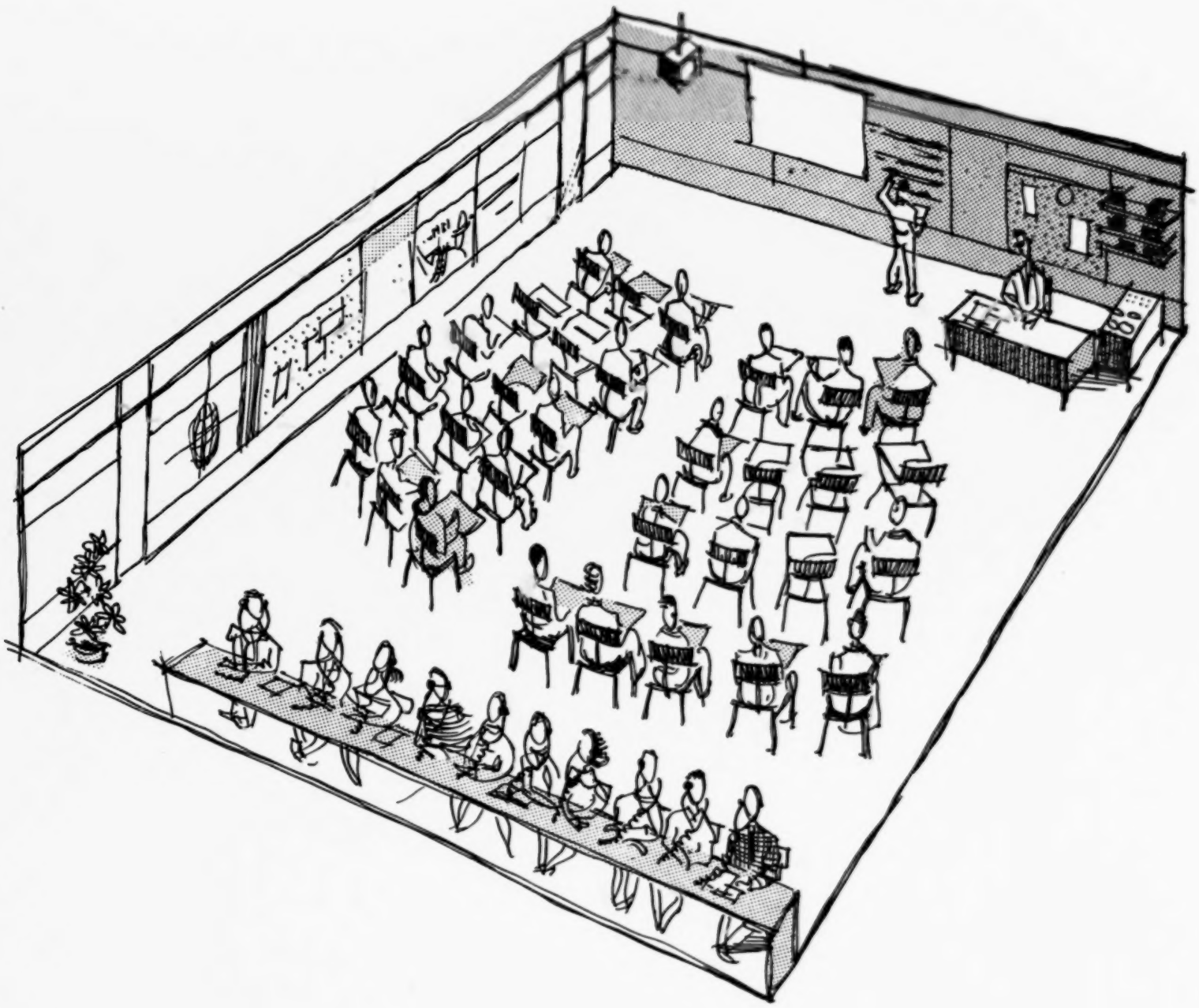
4. The team should visit foreign language classrooms and foreign language laboratories in other school systems. They should observe these facilities in operation. They should be alert to any new improvement that will serve the foreign language teacher and improve the opportunities for learning the foreign language.

5. Final plans and specifications shall meet the team's requirements for electronic facilities which will best accomplish educational objectives in teaching foreign languages. Final plans should follow the instructions and guidelines (pp. 26-28, 263-287) in the Council of Chief State School Officers' Purchase Guide for Programs in Science, Mathematics, Modern Foreign Languages, (Ginn and Co., 1959) and Supplement to Purchase Guide for Programs in Science, Mathematics, Modern Foreign Languages (Ginn and Co., 1961). A bibliography of additional reading sources will be found at the end of this report.

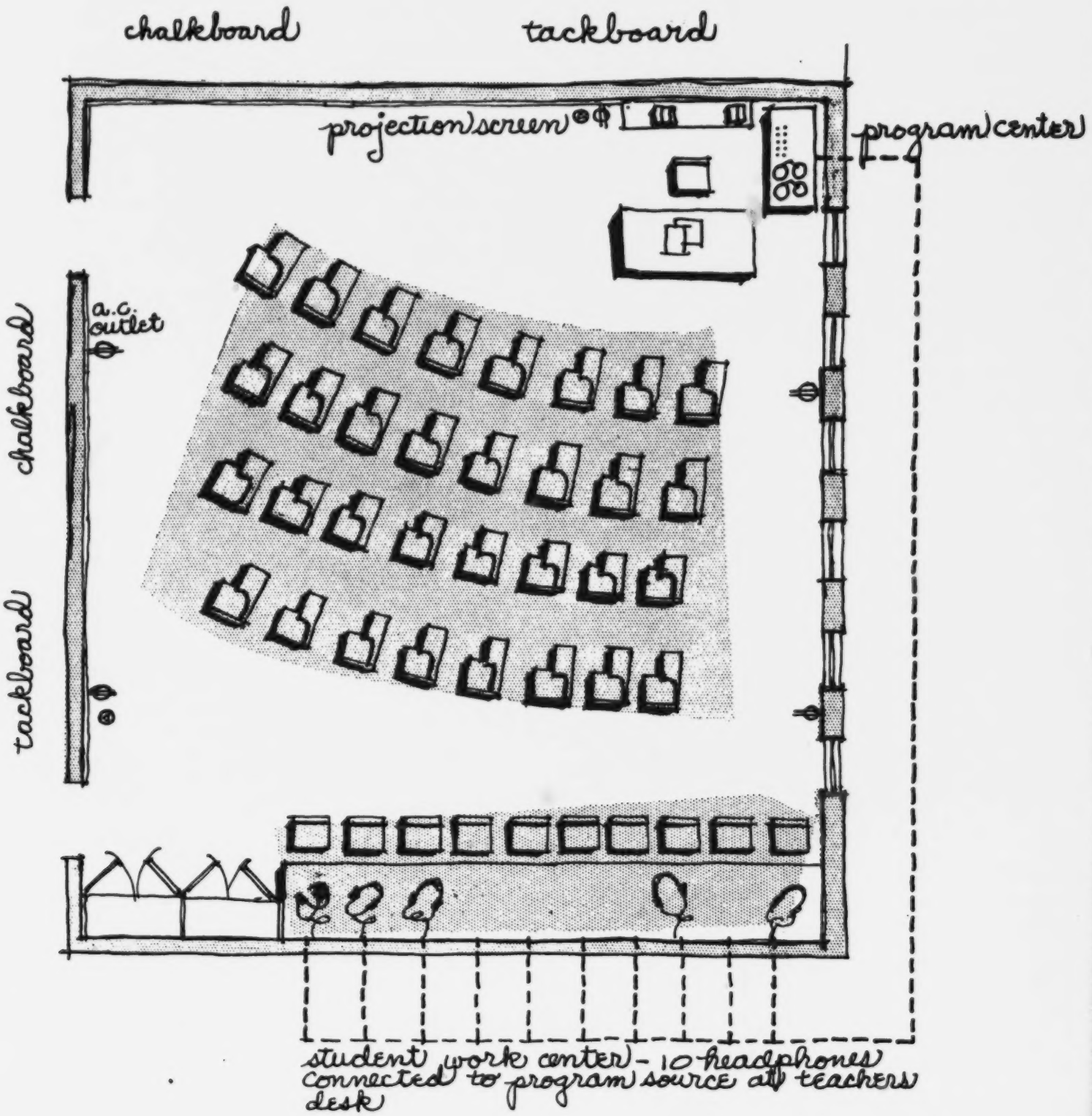
FOREIGN LANGUAGE CLASSROOM



foreign language classroom



foreign language classroom · schematic plan



THE FOREIGN LANGUAGE CLASSROOM

In foreign language learning, the classroom and the laboratory form an effective combination of tools for learning.

The classroom is the facility in which the teacher introduces new material for later practice in the laboratory. Techniques for effective laboratory study are a natural by-product of early preliminary drilling in the classroom.

Generally, after laboratory drill the classroom provides opportunity for practice of language as true communication between teacher and pupil and among pupils. Language is combined with other behavioral patterns (gestures, etc.) which form the total communication process. Thus, the classroom provides a lifelike testing ground for use of spoken language.

The language classroom is used for work with reading and writing in the foreign language. It must provide facilities for large and small group work. In short, it must be a flexible facility for perfecting the listening, speaking, reading and writing skills.

Specifications for the Foreign Language Classroom

Changing secondary school classrooms have resulted from changing methods of instruction and changing types of classroom activities. Nowhere is this more true than in the case of the teaching of modern foreign languages. The philosophy of teaching modern foreign languages has changed completely in most schools in the last two decades. Today the audio-lingual method with its emphasis on listen, speak, read, write, in that order, is winning growing acceptance by teachers of foreign languages and school administrators.

Special features will be needed for the foreign language classroom to meet these new demands:

I. Size of Foreign Language Classroom

How many students are going to occupy this classroom in any single class period? What will be the largest number during any one class period? These are questions that will have to be answered in planning the size of the foreign language classroom. If one assumes that no class will exceed 30 students in number and that we allow 30 square feet per pupil, the classroom will be approximately 900 square feet.

One must keep in mind that the number of high school students to occupy the room at one time and the activities these people are to perform are basic in planning the size of the classroom.

Large group teaching is a possibility that must be considered in making plans for the foreign language classroom. An enthusiasm for experimentation on the part of the school principal, his foreign language teachers, superintendents and school boards may offer possibilities for the use of large

classrooms of an all purpose nature or little theaters, or auditorium to be used as a foreign language classroom. The foreign language laboratory would supplement the large classroom for the work of a drill type.

II. Acoustics

Each foreign language classroom must have the proper acoustical treatment. The ceiling of the room should be acoustically treated. Likewise parallel blank walls should be acoustically treated on one wall. Expert advice should be sought to make available the best possible facilities for the foreign language classroom.

III. Chalkboard

Approximately 20 lineal feet, 42 inches high on the front board. Consideration should be given to having additional chalkboard on one side of the room.

IV. Tackboard

Approximately 20 lineal feet, 42 inches high should be provided on one side.

V. Display

Combination map rail and tack strip at the top rail of chalk and tackboards should be provided.

VI. Room Lighting

Lighting should be incandescent or static resistors should be installed on flourescent lights.

VII. Electrical Outlets

Adequate electrical outlets are defined as follows: 6 outlets located as follows - 2 at the front of the room; 4 additional outlets located in such a way that 2 are distributed on each side, equidistant front and back, plugmold at the rear of the room with 10 outlets minimum. All outlets to be 36 inches above the floor.

VIII. a. Student Work Counter

At the rear of the foreign language classroom at the proper height a work-counter shall be erected. The counter shall be not less than 20 feet long and 3 feet wide. Ten headphones shall be provided at this location. The 10 student positions must be connected to the program source at the teacher's desk. Wiring between the program source and the student position may run via a flat floor mold conduit or along a side wall. Each student position should have a headphone jack and a volume control.

b. Student Work Counter (alternate)

At the rear of the foreign language classroom shall be erected a work counter similar in all respects to the one described in paragraph VIII.a.

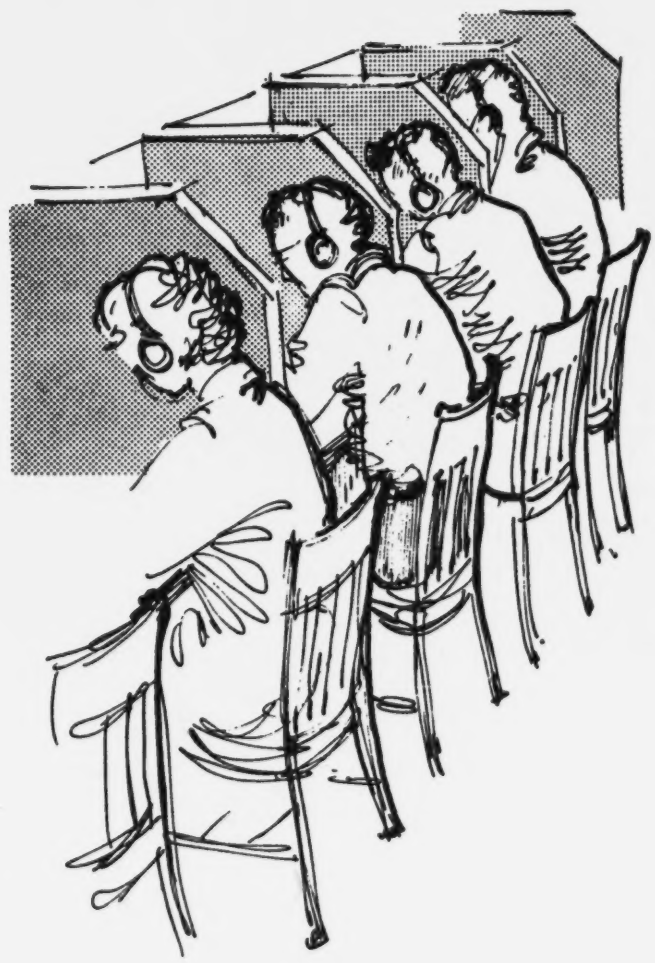
Instead of each position having simply a headphone jack and volume control, however, each student position should have a standard half-track tape recorder with headphones.

This alternate plan allows each student to make his own copy of the teacher's lesson material on tape and to proceed with his study of it at his own rate of learning.

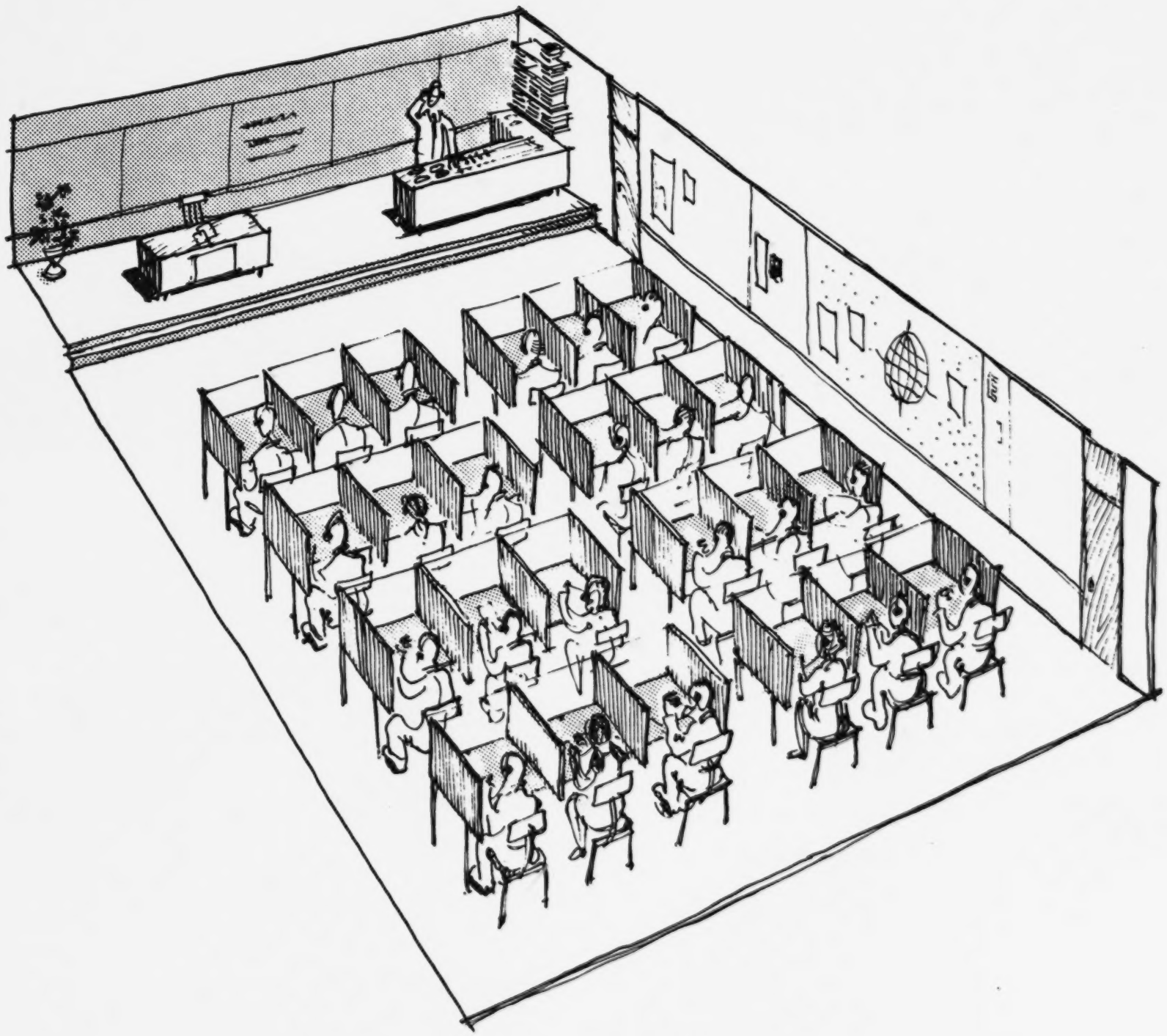
IX. Loud Speaker

Each foreign language classroom shall be supplied with a loud speaker of high quality (response, 36-14,000 cps; crossover at 2,000 cps., capacity, 25 watts, impedance 16 ohms). The speaker should be centrally mounted on the front wall 7 feet from the floor but clear of wall screen. It should be possible to play the tape recorder, record player, or to listen to the sound track of a film through the speaker when desired.

LANGUAGE LABORATORY



language laboratory



THE FOREIGN LANGUAGE LABORATORY

A language laboratory is an installation of electro-mechanical equipment which provides the student with an opportunity to practice the audio-lingual aspects of language learning just as a conventional foreign language textbook gives the student practice in reading and writing.

A complete language laboratory generally consists of a room occupied by student booths or stalls. The booths are wired to a central control console which distributes programs for pupil audio-lingual study. In the relative isolation of his booth the student may drill language patterns. He may listen to a variety of foreign voices so that he may better understand. All members of a class may work individually and simultaneously on the listening-speaking skills. From the control console the teacher may listen to each student position and communicate with students to offer guidance.

The laboratory relieves the teacher of conducting routine drills. He may consequently concentrate on imaginative and flexible language practice during the lessons conducted in the foreign language classroom.

I. Kinds of Language Laboratory

There are several types of language laboratory installations.

A. An audio-passive laboratory is one in which a student simply listens to materials recorded by the teacher or by a native speaker. If the student

responds during pauses on the recording, he neither hears himself through his headphones nor records his responses.

B. In an audio-active laboratory the student either hears himself as he responds to questions posed on the master tape or records his responses for later playback and comparison, or both.

C. A group-study laboratory is one in which all students listen at the same time to one recording played from a remote source such as a console. This type of laboratory may be audio-active or audio-passive.

D. An individual-study laboratory is one in which each student position is equipped with recording and/or playback equipment and each student has a copy of the teacher's master tape which he can stop, start, and rewind as he wishes. Such a laboratory may be audio-active or audio-passive and may be used for group study as well as individual study.

E. A recording laboratory is one in which student responses are recorded for later playback. It is always an audio-active laboratory.

F. A non-recording laboratory is one in which student responses are not recorded. It may, however, be audio-active if the student positions are equipped with activated headphones, i.e., headphones, microphones, and amplifiers which enables the student to hear himself as he speaks.

The committee believes that the audio-active individual study laboratory with facilities for recording is the most desirable. Such a laboratory best takes into consideration individual differences among pupils, permits individual testing, and allows for flexible use.

II. Size of the Foreign Language Laboratory

The facilities of the foreign language laboratory must be large enough to accomodate the number of students in the largest class plus additional facilities needed in reserve for occasional use for individual study or makeup, plus reserve units for use when breakdowns occur. A minimum of 30 square feet per pupil should be allowed for each pupil who will use the laboratory at any one time. If the largest class has 30 pupils, the school should consider installing 33 to 35 positions.

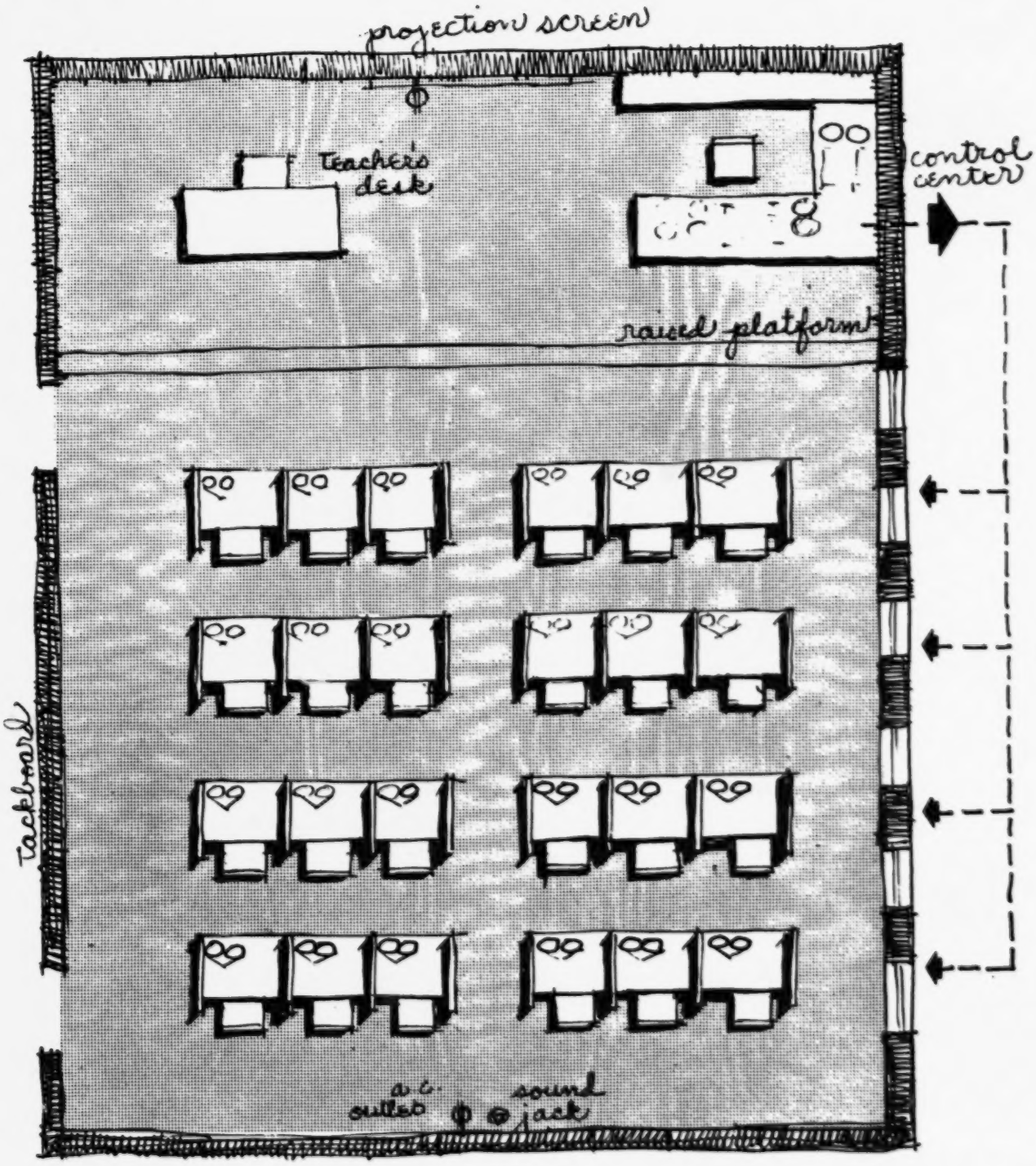
III. Equipment Specifications

A. The Teacher Console. This is a central control for supplying and distributing lesson programs, monitoring and inter-communication and, if desired, remote recording of a student working in a booth.

1. It is recommended that the console have a minimum of 4 master channels and it should provide for easy addition of 6 more channels at a later date. It should be possible to utilize 1 of the channels for playing the sound track of a film through the console to the student positions.

2. Each playback unit should have a volume control, a tone control and an equalizer for 7-1/2 and 3-3/4 ips. operation. Other characteristics

language laboratory · schematic plan



should be consistent with those recommended for the portable tape recorder on page 23, paragraph D2.

3. Tape transports should be provided with tape lifters to lift tape from heads during fast forward and rewind.

4. There should be a loud speaker switch to connect with a ceiling mounted speaker over the booth area. This feature allows for communicating with students at any time.

5. An all-call switch is necessary for the purpose of communication to all student positions at one time.

6. The master distribution switching facility should allow for programming any one of the master channels into any single student position or multiple thereof.

7. The teacher should be able to communicate with the student at any time the student equipment is on.

8. Monitoring switches should enable the teacher to listen to any student working in the laboratory. The monitoring system shall be free of any sound or noticeable drop in program level which may make the student aware that he is being monitored.

9. A console mounted AC switch controlling the power to the motor of the tape deck at each student position is highly desirable for mass tape duplication.

10. There should be facility for playing auxiliary equipment (film projector, record player) to student positions.

11. For microphone and headphone specifications, see below (Student Electro-mechanical Equipment, No. 4).

12. Extra monitoring facilities should be provided at the console.

13. Wiring from console to student booth area shall be provided in a flexible easily-changed under floor electrical duct system.

B. The Student Booth. The student booth is a work area providing semi-isolation by virtue of dividers which separate each student from his neighbor.

1. A standard size for laboratory booths is 30 or 36 inches wide by 36 inches deep by 54 inches high. The larger width is recommended.

2. Many teachers prefer the visual contact afforded by a glass panel in front of the student booth. If installed it would be about 18 inches by 30 or 36 inches.

3. Somewhat better sound deadening is provided by an acoustically treated panel at the front of the booth. The effect of isolation is also

heightened, but there may be some loss of visual control for the teacher.

4. It is highly important that the teacher position be in a commanding location for laboratory administration. In addition, students' line of sight to the chalkboard and the picture screen must be unimpaired. The following are means of insuring unimpaired vision:

   a. Placing the teacher console on a platform 6 inches to 18 inches high.

   b. Installing the student booths on a tiered floor.

   c. Using a chevron design for placing student booths.

5. Internal surfaces of the booth should be acoustically treated with durable material. If acoustical tiles are used, they should be easily replaceable.

6. A wiremold raceway to carry audio wires shall be provided from the console area through each row of booths. Where audio wires are to be brought out of the raceway, a bushed hole or suitable plug shall be provided. All wiring channels shall be placed in a location out of reach of students.

7. The counter top shall be covered with a solid vinyl or an equally durable surface.

8. Installation of an individual incandescent light at each booth is recommended.

C. Electro-mechanical Equipment for Student Positions. Schools must decide what kind of laboratory they wish to install.

1. The audio-passive laboratory (see page 15 for definition) is not recommended. The functions of such a laboratory can be provided by less elaborate equipment (tape recorder, jack box, headphone) in the classroom. A special room equipped with booths seems unnecessary for this type of installation.

2. The audio-active group study laboratory (see page 16 for definition) has the disadvantage of requiring some measure of "lock-step" learning. It is difficult to provide adequately for individual differences with such an installation.

   a. Each student position must provide two inputs, one for the microphone and one for the line source, and two outputs, one for the earphones and one to connect with the central control.

   b. Amplifiers must be matched to the equipment with which they are used.

   c. At each student position a restricted range volume control must be provided.

   d. When amplifiers are provided at each student position, plug-in or connector wired amplifiers are recommended for ease of servicing.

   e. Amplifier shall include a minimum frequency response of plus or minus 2 d.b., 50 to 10,000 cps., a signal to noise ratio of 45 d.b., and an overall distortion of not more than 3 per cent.

   f. See below for microphone and headphone specifications.

   g. If the school is considering the possibility of modifying the audio-active group-study laboratory to an individual-study laboratory at a future date, the amplifiers installed in the booths should be recording amplifiers.

3. The audio-active individual study laboratory (see page 16 for definition) has the advantage that the student can study for his individual needs and can record his answers to spoken questions in testing situations. However, more equipment is under student control than with the group study laboratory. An installation for individual study also costs more.

   a. Tape recorders for student positions may be bought in either single or dual channel. Purchase of single channel equipment affects considerable reduction in cost. It is doubtful that the added expense of dual channel equipment has a demonstrable educational benefit. However, single channel recorders are not

a part of most standard laboratory equipment offered by suppliers.

b. Tape transports.

(1) Tape speed on student equipment should be 3-3/4 ips. with an additional speed of 7-1/2 ips. if possible.

(2) A reel to reel tape cartridge type mechanism is desirable for ease of operation.

(3) A pause mechanism should be provided to facilitate instantaneous stopping and starting of tape motion without handling of main tape control knob or lever.

(4) The tape control lever (knob) shall provide the following functions: (1) Fast forward, (2) Rewind, (3) Stop, (4) Play.

(5) The tape mechanism as a unit shall be easily removed and replaced for servicing.

(6) Vendor of the cartridge shall guarantee the cartridge from warping and binding tape reels.

c. Amplifier and tape machine record-playback standards.

(1) There shall be a minimum frequency response of 50 to 10,000 cps., plus or minus 2 d.b. at 7-1/2 ips., a signal to noise ratio of 45 d.b. and an overall distortion of not more than 3 per cent.

(2) A control should be provided for the student to regulate volume of master program and volume of activated student response from student position. In addition, a preset recording level control should be provided within the student amplifier to regulate the level of the incoming program.

(3) An amplifier should be easily replaceable for servicing.

d. Microphones. To be used in laboratories at the central control and in student positions.

(1) Microphones at both student and teacher position should have a smooth and essentially uniform frequency response of 75-9,000 cps. The microphone for the teacher console should be mounted on a stand with a heavy base which is broad enough to prevent easy tipping of the microphone.

(2) If a microphone of the above type is chosen for student positions, the microphone face should be about 10 inches from the level of the booth counter. The cord should be hidden or coiled and supplied at one end with a shielded phone plug with a stress relief clamp.

(3) For pupil positions many schools will wish to choose a microphone which is permanently mounted either on a boom arm or gooseneck. The boom arm is generally preferable because it is not as creaky as the gooseneck and it seems less likely to loosen up or break.

(4) Student microphones particularly should be unidirectional.

e. Headphones. Headphones must be provided for student positions and for the teacher console. For the student they provide for individual listening from a program source. For the teacher they are used primarily for monitoring student work. Poor quality earphones will seriously handicap an otherwise good system.

(1) Headphones shall have a frequency response of 50 to 10,000 cps. or better.

(2) Connecting cords must be of such length as to prevent the earphones from striking the floor when dropped.

(3) Over-the-head earphones are recommended. They should be supplied with earcushions for comfort and to exclude extraneous noise. Cushions should be removable for cleaning and be the best material available in terms of cleanliness and long wear.

D. General Electro-mechanical Equipment for the Language Laboratory

1. Record Player. Record player may be used to play records through the laboratory system, through the loudspeaker in the classroom, or through its own amplifier-speaker system.

a. The record player should be of the manually operated type.

b. It should operate at 16 r.p.m., 33-1/3 r.p.m., 45 r.p.m., and 78 r.p.m.

c. A variable speed control should be provided.

d. The overall frequency response must be at least 50 to 12,000 cps. plus or minus 2 d.b.

e. The player should provide for standard and micro-groove playing.

f. It should accomodate up to 12 inch disks.

2. Portable Tape Recorder. This unit may be used as an auxiliary lesson source in the language laboratory, as a means of remote recording of the student from the console or as the lesson source in the audio-passive language classroom system.

a. The machine shall have a tape speed of 3-3/4 ips. and of 7-1/2 ips.

b. Frequency response shall be at least 100 to 15,000 cps. plus or minus 2 d.b. at 7-1/2 or at least 100 to 9,000 cps. plus or minus 2 d.b. at 3-3/4 ips.

c. The machine shall have a signal to noise ratio of at least 45 d.b. and flutter and wow shall not exceed 0.4 per cent.

d. Amplifier output shall be at least 10 watts.

e. Harmonic distortion shall not exceed 3.0 per cent at the normal operating level.

f. The recorder shall be equipped with fast forward, rewind, stop, and play functions.

g. The recorder shall have outlets so that headphones and/or an external loudspeaker may be used in lieu of the built-in loudspeaker and inputs for microphone, record player and radio.

h. A pause mechanism shall be provided to facilitate instantaneous stopping and starting of tape motion without using the main tape control knob.

i. On a two-track recorder it should be possible to play either track through the self-contained speaker of the recorder.

3. Loudspeaker. The loudspeaker will be used for general listening in both classroom and laboratory. It shall be of high quality (See page 9, paragraph 9.

4. A master power switch with pilot light for the entire laboratory system (not including ceiling lights) should be located at a point easily controlled and observed by the instructor.

E. Other Recommendations.

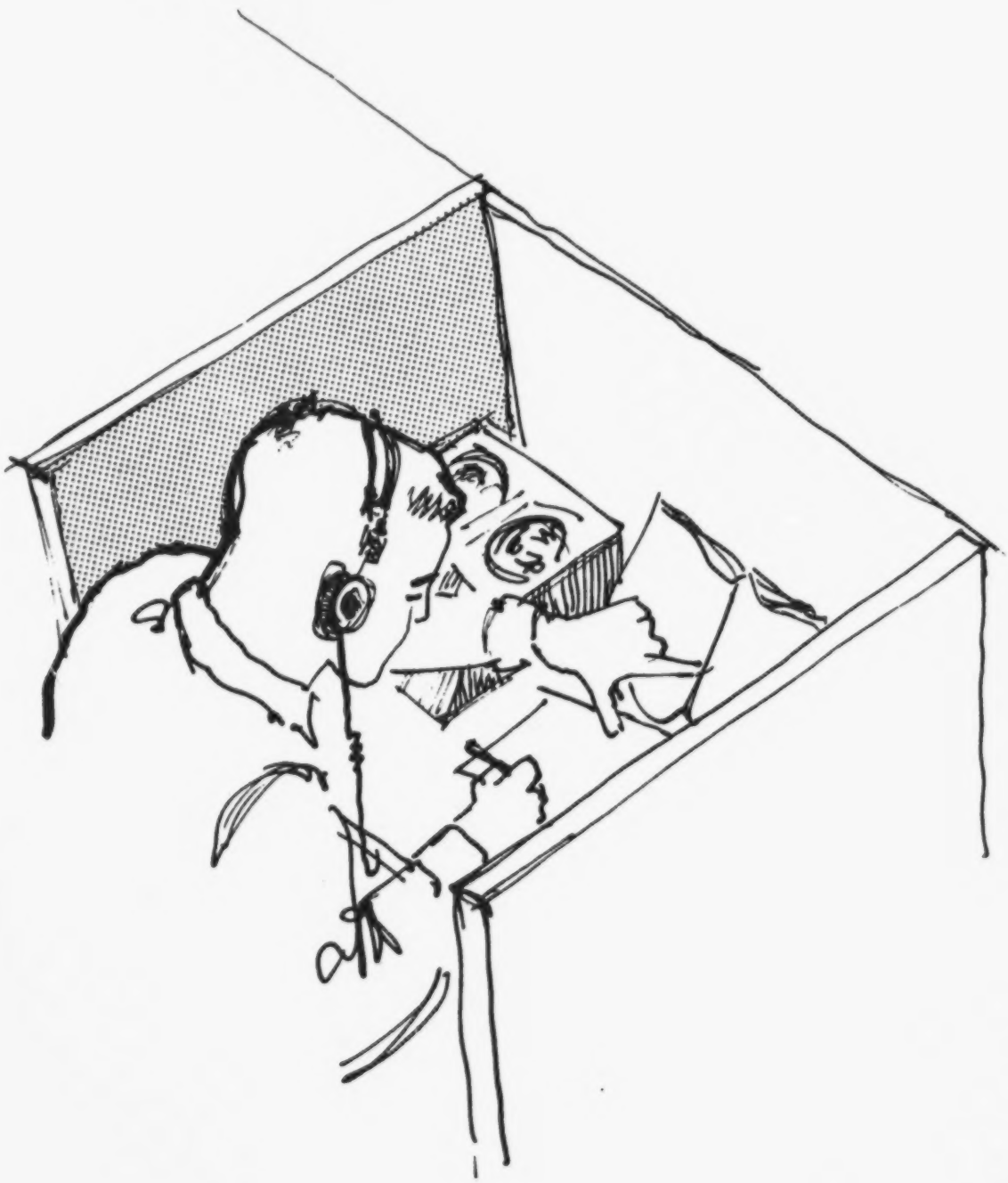
1. Office space and work area about 10 feet should be available immediately adjacent to and connected with the laboratory. A window permitting visual supervision of the laboratory is advisable. The work area should be equipped for editing and duplicating tapes, listening to student recordings, previewing visual materials, listening to prerecorded materials, storing tapes, etc.

2. To insure good recordings, a recording room (about 10 feet by 10 feet should be provided. It should be equipped with double doors or a Riverbank type door, acoustical treatment on ceiling and walls, incandescent lights and a silent heating and ventilation system.

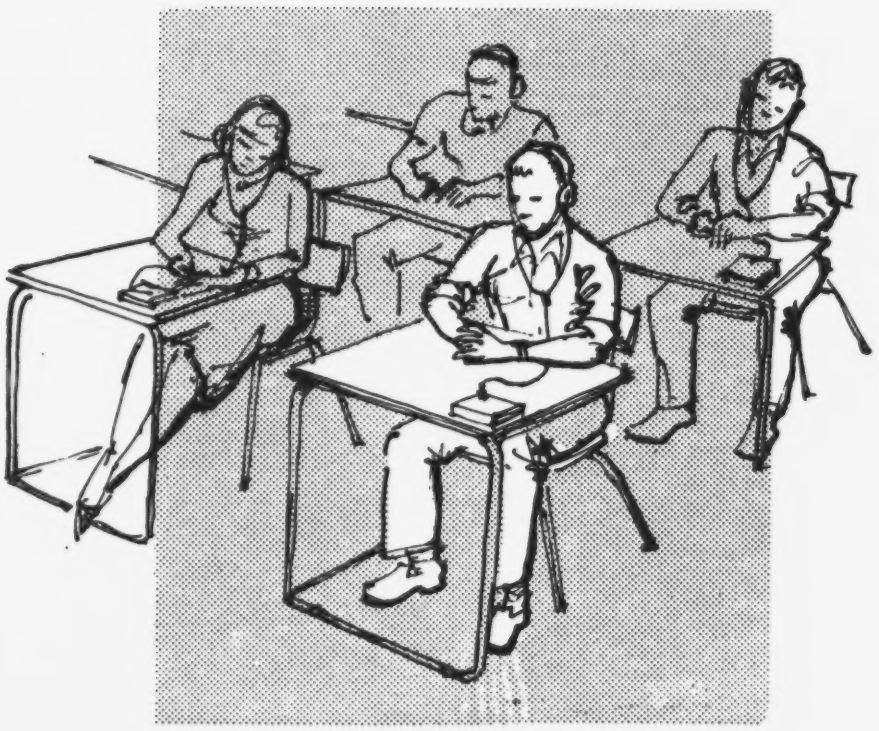
3. If possible, projection equipment for visual aids should be used from a projection room centered behind the rear of the laboratory. This room can also be used for storage of such equipment. An input for sound from films should be located in the projection room or at the rear of the laboratory if no projection room is provided.

F. Other Possible Equipment Needs

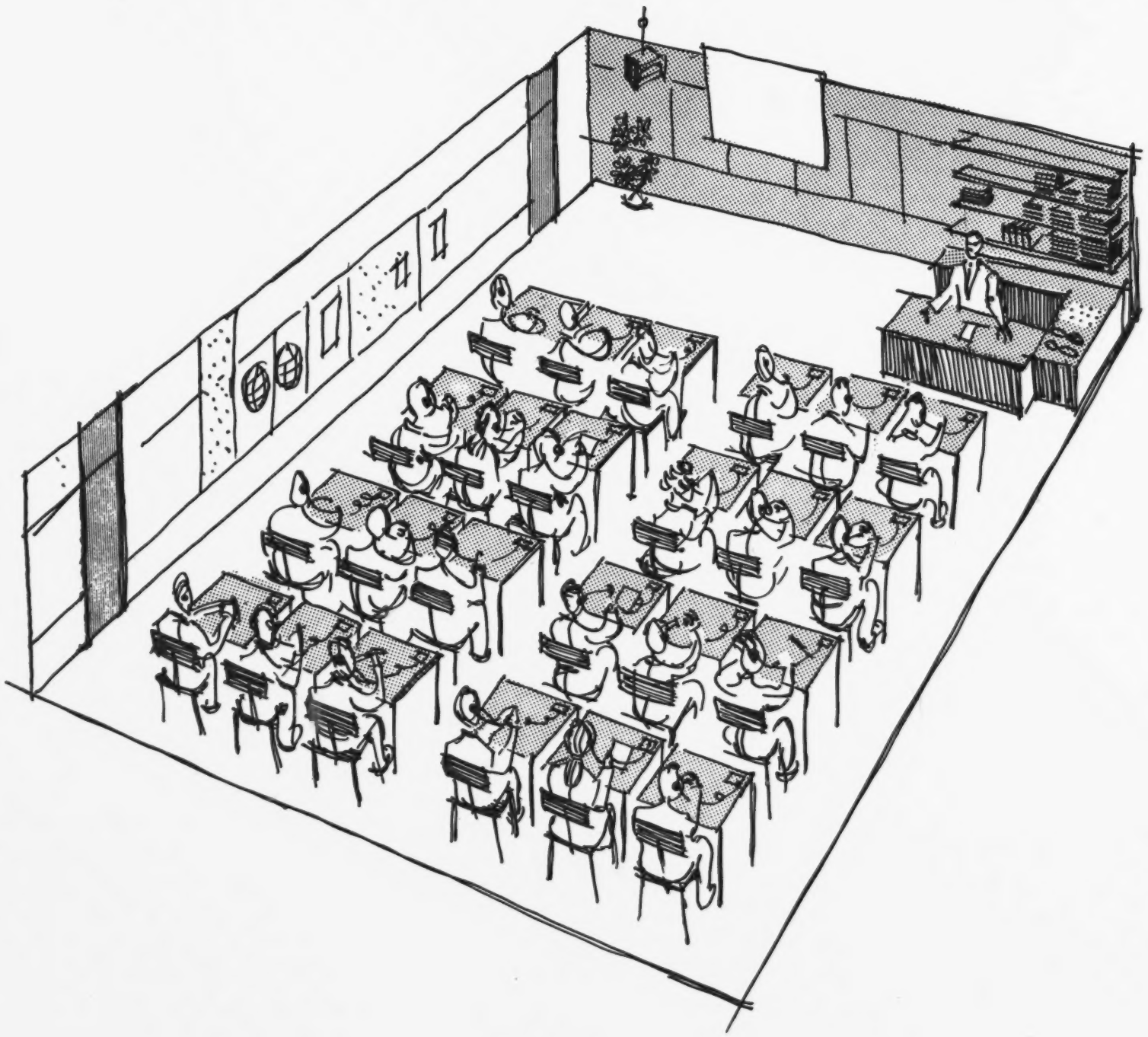
1. Opaque projector.
2. Overhead projector.
3. Slide and filmstrip projector.
4. Motion picture projector.
5. Permanently mounted wall screen.



ELECTRONIC CLASSROOM



electronic classroom



THE ELECTRONIC CLASSROOM

Many schools wish to have some of the advantages of the language laboratory, but feel that the facility must be contained in the foreign language classroom. Other schools feel that there is a great merit in having electronics equipment always accessible so that some tape drills may be used during every class hour. This desire to combine the advantages of both classroom and language laboratory has stimulated the development of the so-called "electronics classroom," a classroom which may be readily converted into a laboratory-like installation.

In the electronic classroom each student position (desk or table) is wired for electronic components. Yet in most other respects the electronic classroom is not radically different from any other foreign language classroom.

I. Kinds of Electronic Classroom

A. The audio-passive system. In this system a program is sent to the student positions through audio wiring. The student listens through earphones. He may repeat after a model voice but does not hear his voice electronically amplified.

B. The audio-active system. With the audio active system, the student may repeat after a model voice and hear himself in his earphones. Provision may be made for communication between the teacher at his programming center and the pupil at his seat. The teacher can listen to student responses and offer individual or group correction when necessary. Often it is possible to record individual students from the programming center with or without the student's knowledge.

C. The audio-active individual study system. See pp. 21-23.

II. Electro-mechanical Equipment for the Electronic Classroom

A. General. Overall performance of equipment should deliver a frequency response of from 50 to 9,000 cycles plus or minus 2 d.b.

B. Audio-passive Equipment

1. Teacher

a. The programming source may be as simple as a single record player or tape recorder.

b. If a number of lesson channels is desired it will be necessary to build or purchase a switching device to allow for sending programs to the desired student positions. As many lesson sources (i.e., tape recorders and/or record players) will be required as there are channels.

2. Pupil

a. Pupil headphones should satisfy requirements listed under Language Laboratory (page 23).

b. Student positions should have individual volume controls.

C. Audio-active Equipment

1. Teacher Equipment

a. The programming center may vary considerably in complexity depending upon the functions desired. The specifications of the teacher's console (see Language Laboratory, page 16) are satisfactory for more elaborate installations.

b. Teacher headphones and microphones should meet specifications found on pages 22 and 23.

2. Pupil Equipment

a. Student headphones and microphones should meet specifications found on pages 22 and 23 except that a boom microhpone attached to the headphones is usually more suitable because of ease of storage.

b. Other student equipment must include a jack, volume contrcl, and an amplifier for activating student headphones. Specifications for pupil amplifiers are found on page 22 (items c1, c2, and c3).

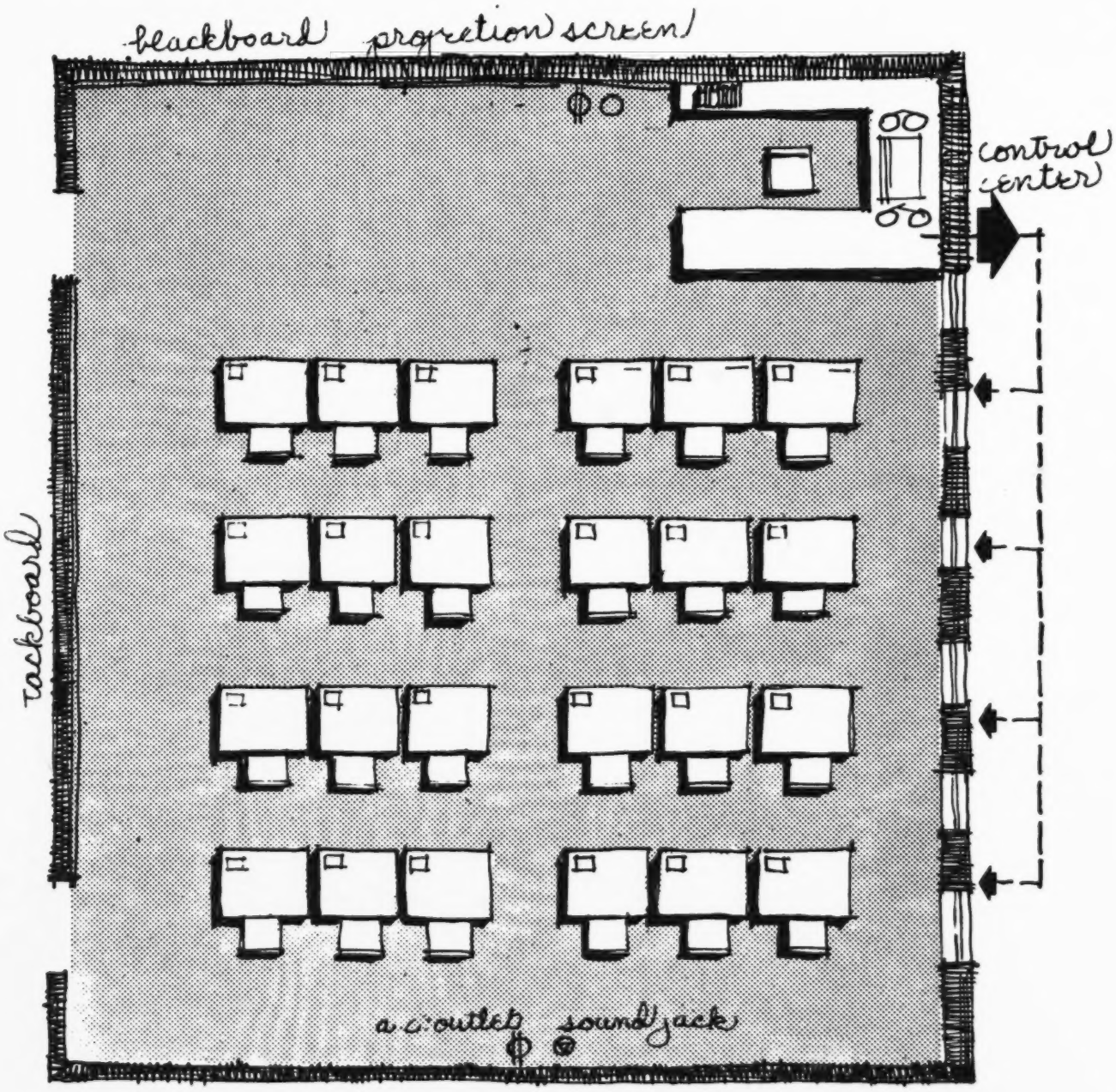
III. Furniture for the Electronic Classroom

A. Many schools make no attempt to create individual isolation other than that provided by headphones. In this case conventional student desks or tables may be wired.

B. Sometimes pupil positions are equipped with convertible booth equipment. This equipment features folding partitions which create some student isolation when raised. When lowered, such partitions generally cover the electronic equipment and conventional classroom activities are possible.

C. When partial installations of electro-mechanical equipment are made in the language classroom, they may be installed in conventional language laboratory booths at the rear or sides of the room. Use of booths helps to eliminate interference between pupils working at electronic positions

electronic classroom · schematic plan



and those engaged in other activities.

D. All pupil furniture which is wired should be permanently secured to the floor to prevent breakage of wiring.

IV. Other Equipment and Facilities

A. Other desirable features of the electronic classroom will be found under the sections entitled The Foreign Language Classroom and The Foreign Language Laboratory.

B. A motion picture projector, opaque projector, overhead projector, and slide and filmstrip projector are desirable auxiliary equipment for the electronic classroom.

C. A small room (about 75 square feet) at the rear of the electronic classroom is highly desirable. This room could serve for storage of equipment and materials. In addition, such a room should have work space, recording space, and could serve as a projection room for visual aids.

COMMON LANGUAGE LABORATORY TERMS

ACETATE BASE - The transparent plastic film which forms the tough backing for most of the audible range magnetic recording tape made. It is very popular because it meets all normal recording requirements and costs less per foot than polyester backing.

A. C. SWITCH - A switch to turn on and off the alternating current which provides electrical power.

ALL CALL SWITCH - A switch mounted on the console to enable the teacher to communicate simultaneously with all student positions.

AMPLIFIER - A component designed to boost a signal sufficiently to operate a loudspeaker or headphones.

AUDIBLE TONES - Sounds with wave frequencies which the average human can hear and which range from 30 to 15,000 cycles per second.

AUDIO-ACTIVE - Wiring which carries the sound signal from its source (console, projector, etc.) to a desired point (student booth, loudspeaker, etc.).

AUDIO-LINGUAL - A term commonly used to describe a type of language instruction which stresses listening and speaking skills.

AUDIO-PASSIVE - A term used to refer to listening practice when no oral response is expected. Used to apply to facilities in which students are equipped with headphones only.

AUDIOWIRING - Cables through which the sound is transmitted as compared to power wiring which carries the electrical current. Unless shielded cables are used, hum and cross-talk interference may occur.

AUTOMATIC SHUT-OFF - Special switch incorporated in some tape recorders which automatically stops the machine when the tape runs out or breaks.

BOOTHS - A small work area for students providing semi-isolation by virtue of dividers which separate each student from his neighbor. Usually some of the booth area is acoustically treated to reduce interference with other student positions.

BRAKING MECHANISM - Apparatus on a tape recorder which stops the motion of the reels. If not properly adjusted, tape spillage, stretch, or breakage may occur.

BULK ERASER - A 110 volt A.C. device used to erase an entire reel of magnetic tape at once without running it through a recorder. It uses a strong magnetic field which neutralizes the magnetic patterns on the tape.

CAPSTAN - Rotating spindle or shaft which draws the tape across the heads at a constant rate of speed on both recording and playback. Operates in conjunction with a rubber pressure roller.

CERAMIC MICROPHONE - Inexpensive piezoelectric type microphone supplied with many tape recorders which employs a ceramic element to generate voltages. Extremely rugged, it requires more gain than the more fragile crystal microphone.

CHANNEL - Audio information or signal which is carried or transmitted over a specific path or track.

CHANNEL, MULTI - When applied to program source, this means that several sources can be transmitted simultaneously to selected student positions in the language laboratory network. When referring to a recorder, it means that several different signals or channels are recorded or played back simultaneously but separately through a multi-track recorder.

CONDUIT - A kind of rigid or flexible metal pipe or tubing which contains the wires that conduct the signals or current.

CONSOLE - A central control unit for a language laboratory installation. It provides a program source. In addition, it may provide for monitoring of student positions, intercommunication between teacher and pupil or pupil and pupil, and recording of pupils.

CRYSTAL MICROPHONE - Inexpensive piezoelectric type microphone supplied with many tape recorders which employs a natural crystal -- usually Rochelle salt -- as its element. As the diaphragm moves, it causes the crystal to generate electrical voltages. Should be handled with care, however, and never exposed to heat. Provides best quality of all inexpensive microphones but is probably not rugged enough for language laboratory use.

CYCLES PER SECOND - The unit for measuring the frequency, or "pitch," of any sound. Abbreviated cps.

DECIBEL - Abbreviated "db," it is a relative measure of sound intensity or "volume." It expresses the ratio of one sound intensity to another. One db is the smallest change in sound volume that the human ear can detect.

DISTORTION - Any difference between the original sound and that reproduced by a recording machine. Distortion takes on many forms, and although it can never be completely eliminated, it can be reduced to a minimum in a good recording and reproducing system. Tape offers the maximum potential in distortion-free recording.

DUAL CHANNEL RECORDING SYSTEM - A system which provides for the simultaneous recording of two sources on separate channels. In this system, the student may record at his position both the program coming from the console and his own voice.

DUAL TRACK RECORDER - Usually a tape recorder with a recording head that covers half of the tape width, making it possible to record one track on the tape, then turn the reels over and record a second track in the opposite direction. Sometimes called a half-track recorder.

EAR CUSHIONS - Rings of soft rubber or plastic foam set around the earphones to minimize the interference of outside sounds for the listener.

ELECTROMECHANICAL - Refers to devices whose functions are accomplished by interrelated mechanical and electrical (or electronic) processes. Sometimes used to denote any of the audio or audio-visual components of language laboratory facilities, such as tape recorders, headphones, microphones, and so on.

ERASURE - Neutralizing the magnetic pattern on tape by placing it in a strong magnetic field, thereby removing the recorded sound from the tape. An "erase" head on a tape recorder does this automatically to any sound previously recorded on the tape just before the tape reaches the "record" head. A permanent magnet can also be used to erase magnetic tape, but with a resultant increase in background noise.

EQUALIZATION - Either boosting or decreasing the intensity of the low, middle, or high tones of a recording during a recording or playback or both. This compensation serves to correct any deficiencies in the recording system and to increase the signal-to-noise ratio.

FAST FORWARD - Tape movement control which permits fast winding of the tape to facilitate location of a specific portion which has not yet been played. The speed of this movement may vary considerably from one model recorder to another.

FEED REEL - Reel on a tape recorder which supplies the magnetic tape.

FIDELITY - A measure of the exactness with which any sound is duplicated or reproduced.

FLAT RESPONSE - Ability of an audio system to reproduce all tones (low or high) in their proper proportion. A sound system might be specified as having an essentially flat response, plus or minus two db. from 75 to 9,000 cycles per second.

FLUTTER - Very short rapid variations in tape speed causing similar variations in sound volume and pitch, not present in the original sound. A form of distortion.

FOOT SWITCH - Electrical or mechanical foot pedal device for stopping and starting a tape recorder without use of hands, especially useful for dictating and transcribing.

FREQUENCY RESPONSE - This is the output level of a recorder or sound system over a specific range of frequencies which is usually charted in the form of a curve. It is more specific than "frequency range" and includes the plus or minus decibel rating which shows the "flatness" of the response or deviations above or below an average level.

GAIN - The ratio between the input level and output level of a piece of sound equipment. Gain is increased by means of an amplifier.

GROUP STUDY LABORATORY - A language laboratory designed so that groups of students, often an entire class, are working simultaneously on a given lesson.

HEAD - The ring-shaped electromagnet across which the tape is drawn, and which magnetizes the tape's iron oxide coating in a series of patterns. Most tape recorders employ a combination record-playback head and also an erase head. Some professional machines also employ a monitor head for listening to the recorded sound a split second after it has been put on tape.

IMPEDANCE - A rating in ohms of the input and output of any electrical component, generally referred to either as "high" or "low" impedance. Importance is that, in connecting any two components, the output and input impedances must match. Most home tape recorders use a high impedance microphone and require a relatively short, shielded connecting cable. Low impedance microphones used on professional recorders can use much longer cables with no loss in high frequencies.

INDEX COUNTER - An odometer type counter which makes it possible to note the location of any particular selection of a tape, thereby making it easier to find. Most late model recorders feature built-in index counters.

INDIVIDUAL STUDY LABORATORY - Often called a library type laboratory. This facility enables each student to work individually with his own lesson at his own speed.

IN LINE HEADS - Arrangement of stereophonic heads on a tape recorder so that gaps are directly in line. One head is mounted directly above the other. Also called "stacked" heads.

INPUT - An electrical voltage fed into an amplifier.

INVERTER - Device to change one type of electrical current to another type. Frequently used to change 6 volt or 12 volt direct current to 110 volt alternating current for operation of a tape recorder in an automobile.

I.P.S. - Abbreviation for tape speed in inches per second.

JACK - Receptacle for a plug connector leading to the input or output circuit of a tape recorder or other piece of equipment.

LEADER AND TIMING TAPE - Special tough non-magnetic tape which can be spliced to either end of a tape to prevent damage or breaking off of the magnetic tape ends and possible loss of part of the recorded material. Used as a timing tape, therefore, it can be spliced between musical selections on a tape providing a pause of a given number of seconds, depending on the tape speed.

LEVEL INDICATOR - A device on the tape recorder to indicate the level at which the recording is being made and which serves as a warning against under-recording or over-recording. It may be a neon bulb, a "magic-eye," or a VU meter.

LOW PRINT TAPE - Special magnetic recording tape which reduces print-through (transfer of signal from one layer to another) which could result when tape is stored for long periods of time. These tapes are especially useful for "master recording" (making an original recording from which copies will be made).

MAGNETIC TAPE - A high-quality plastic tape which has been precision-coated by the manufacturer with a layer of magnetizable iron oxide particles. The result is a recording media that is subject to virtually no wear, can be erased and re-used, and offers the highest fidelity of reproduction possible today.

MASTER - Term used to designate a device which has control over several others or produces the original taped material. Often applied to tape, program, console, switch, duplicator, etc. The term "slave" is used sometimes to designate another device controlled by a "master."

MIL - One thousandth of an inch. Tape thickness is usually measured in mils.

MIXER - Device by which signals from two or more sources can be fed simultaneously into a tape recorder at the proper level and balance.

MONAURAL RECORDER - Standard type tape recorder which uses a single-channel system consisting of one microphone, amplifier and recording head (as opposed to a binaural or stereophonic recorder).

MONITORING - In the language laboratory the term generally implies listening to students electronically from the console.

OUTPUT - An electrical voltage coming from an amplifier and normally fed into a loudspeaker.

OXIDE - Microscopically small particles of ferric oxide dispersed in a liquid binder and coated on a tape backing. These oxides are magnetically "hard" -- that is, once magnetized, they remain magnetized permanently unless they are demagnetized by exposure to a strong magnetic field.

PATCH CORD - Sometimes called "attachment cord." A short cord, or cable, with a plug on either end (or with a pair of clips on one end) for conveniently connecting two pieces of sound equipment such as a phonograph and tape recorder, an amplifier and speaker, etc. Not used for 110 volt current.

PAUSE LEVER - Any control which permits the instant but temporary halting of playback or recording functions.

PLAYBACK HEAD - Magnetic head used to pick up signal off a tape. Often same head as used for recording, but with circuitry changed by means of switch.

PLUG - Circuit connector which is inserted into a jack.

POLYESTER BACKING - Plastic film backing for magnetic tape used for special purposes where strength and resistance to temperature and humidity change are important.

PORTABLE TAPE RECORDER - Usually any tape recorder designed to be easily moved or carried about, but in most cases requiring an A.C. power supply. Some portable recorders, however, are self-powered and use batteries or a spring motor; hence are completely portable.

POWER AMPLIFIER - An amplifier designed to operate a loudspeaker.

POWER CORD - Cord for connecting the tape recorder to 110 volt A.C. current.

PRE-AMPLIFIER - An amplifier that raises extremely weak signal levels such as those from a microphone, magnetic playback head or a phonograph pickup to a level usable by the power amplifier. Some tape recorders combine the pre-amp and the power amplifier. Others -- especially the tape recorders designed for use in high fidelity music systems -- may feature a separate pre-amplifier. In such cases, the pre-amp includes an equalization circuit. In addition, the bias oscillator (necessary to record on tape) is often mounted in a unit with a pre-amp.

PRE-RECORDED TAPE - A recording on tape that is commercially available.

PRINT THROUGH - Transfer of the magnetic field from layer to layer of tape on the reel.

PROGRAM - Lesson unit or other recorded practice material which is played from the console or a simple recorder and received by the students at their stations.

QUICK-STOP CONTROL - Feature of some tape recorders making it possible to stop the movement of the tape temporarily without switching the machine off "play" or "record" position. Essential for a tape recorder used for dictation.

RAW TAPE - A term sometimes used to describe tape that has not been recorded. Also called "virgin" tape or "blank" tape.

RECORDING NOISE - Noise induced by the amplifier and other components of the recorder. High quality magnetic tape itself is inherently noise-free.

REEL, SUPPLY - in a reel-to-reel (two reel) tape deck this is the reel which supplies the tape as it is being recorded or played back. Also called feed reel.

REEL, TAKE-UP - Reel on a tape deck which receives the tape after it passes through the head assembly in recording or play-back.

RELUCTANCE MICROPHONE - Inexpensive electro-magnetic type microphone supplied with many tape recorders which is extremely rugged and durable but generally not as high quality as crystal or ceramic types. Employes a metal "wand" which moves in a magnetic field to produce varying voltages.

REWIND CONTROL - Button or lever for rapidly rewinding tape from the take-up reel to the feed reel.

SELF-POWERED RECORDER - Tape recorder containing its own powersupply, either a combination of wet and dry cells to power the unit, or dry cells in conjunction with a spring-driven motor.

SIGNAL-TO-NOISE RATIO - The ratio between the loudest, undistorted tone recorded and reproduced by a recorder and the noise induced by the recording system itself. Normally measured in db's.

SINGLE-TRACK RECORDER - A tape recorder which records only one track on the tape. Usually a full-track recording head is used which covers the full width of the 1/4-inch tape although some machines use a narrower, half-track recording head which records a single track down the middle of the tape.

SPLICING BLOCK - Metal or plastic device incorporating a groove in which ends of tape to be spliced are inserted. An additional diagonal groove provides a path for a razor blade to follow in cutting the tape. Makes splices very accurately using narrow-width 7/32" splicing tape.

SPLICING TAPE - A special, pressure-sensitive, non-magnetic tape used for splicing magnetic tape. Its "hard" adhesive will not ooze and consequently will not gum up the recording head, or cause adjacent layers of tape on the reel to stick together.

STACKED HEADS - Arrangement of recording heads used for stereophonic sound where the two heads are located directly in line, one above the other.

STAGGERED HEADS - Arrangement of recording heads used for stereophonic sound where the heads are located 1-7/32" apart. Stereo tapes recorded using staggered heads cannot be played on recorders using stacked heads, or vice versa.

TAPE CARTRIDGE - Magazine or hard plastic case containing a reel (or two) of tape which is placed on a recorder without threading. Reel-to-reel cartridges allow the tape movement to be controlled in either direction. Endless-loop or continuous-loop cartridges can continue playing indefinitely but do not permit rewinding at will.

TAPE PLAYER - Unit for playback only of pre-recorded tapes. Sometimes called a tape phonograph.

TAPE SPEED - Tape moves past the recording head at a predetermined speed measured in inches per second (ips). The faster the speed, the better the audio quality or frequency response. Standard speeds are 1-7/8 ips, 3-3/4 ips, 7-1/2 ips, 15 ips, and 30 ips. Most standard recorders use 7-1/2 ips and 3-3/4 ips. The Purchase Guide recommends 7-1/2 ips for language laboratory use.

TAPE SPLICER - Device for splicing magnetic tape automatically or semi-automatically similar to a film splicer. Different models vary in operation, most using splicing tape, some employing heat.

TAPE THREADER - Device on the hub of a reel for securing the end of the tape to the reel.

TAPE TRANSPORT - Mechanism which moves the tape past the heads. It includes head assembly, motor, and controls for tape movement. It does not normally refer to the electronic components which together with the transport mechanism constitute a tape recorder. Also called a tape deck or tape drive.

THREADING SLOT - Slot in recording head assembly cover-plate into which tape is slipped in threading up the reels for use of the recorder.

TRACK - Magnetized area on a tape laid down by the head in recording.

TRACK, FULL - Track which occupies almost the full width of the tape and consequently is a single track recorder.

TRACK, HALF - Track which occupies about half the tape width. Sometimes erroneously called dual-track since a second track can be recorded by turning the reels over and moving the tape in the opposite direction.

TRACK, QUARTER - Track which occupies about one-fourth the tape width. Tracks may be used individually or in pairs.

VOLUME - An acoustical -- rather than electrical -- measurement, which refers to the pressure of the sound waves in terms of dynes per square centimeter. The louder the sound, the greater the pressure. Most technicians prefer to talk in terms of decibels.

WOW - Slow variations in tape speed causing similar variations in sound volume and pitch not present in the original sound. A form of distortion.

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